

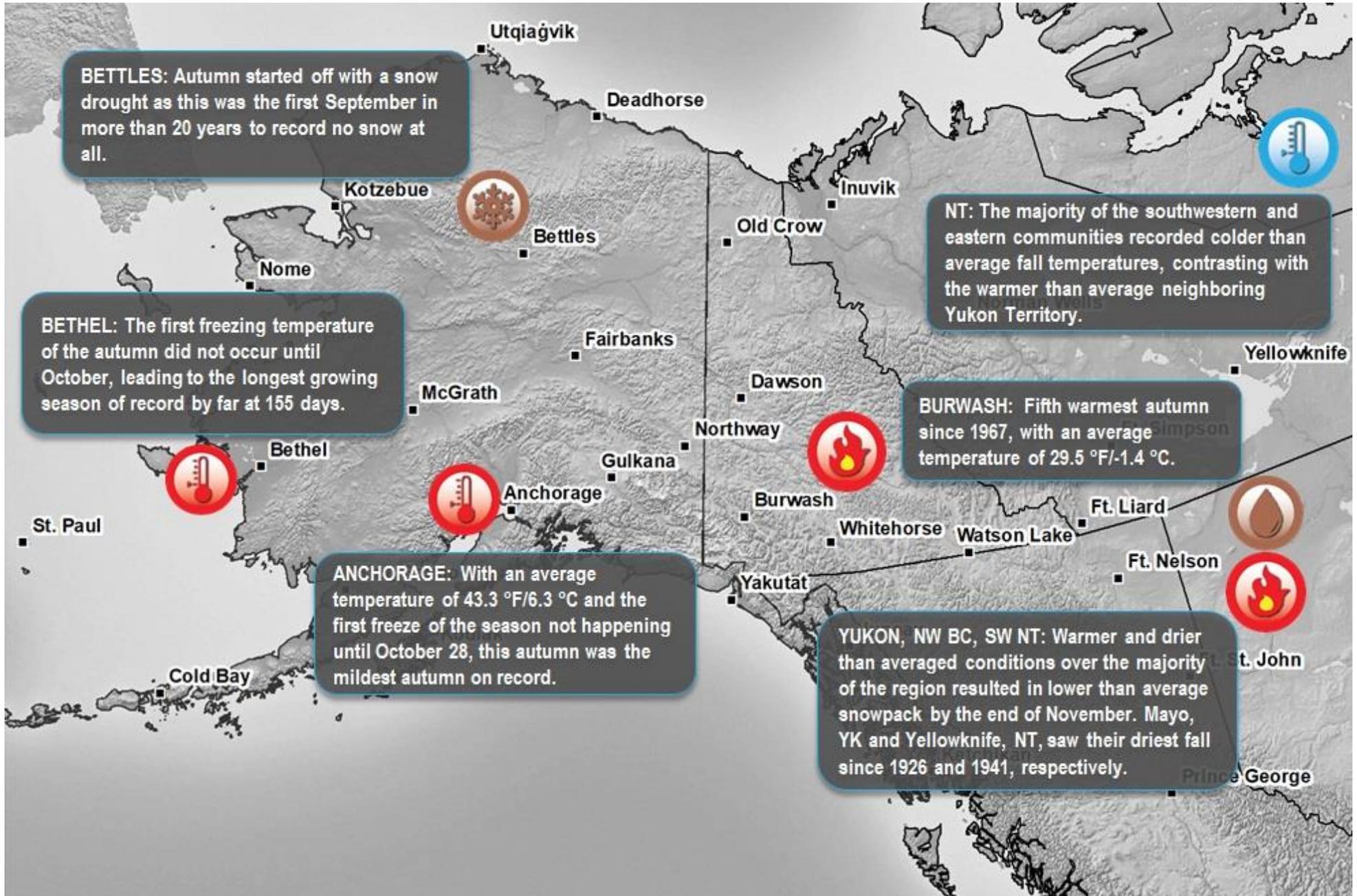
ALASKA and NORTHWESTERN CANADA

Weather and Climate Highlights and Impacts, Sept.-Nov. 2018; Climate Outlook Jan.– Mar. 2019



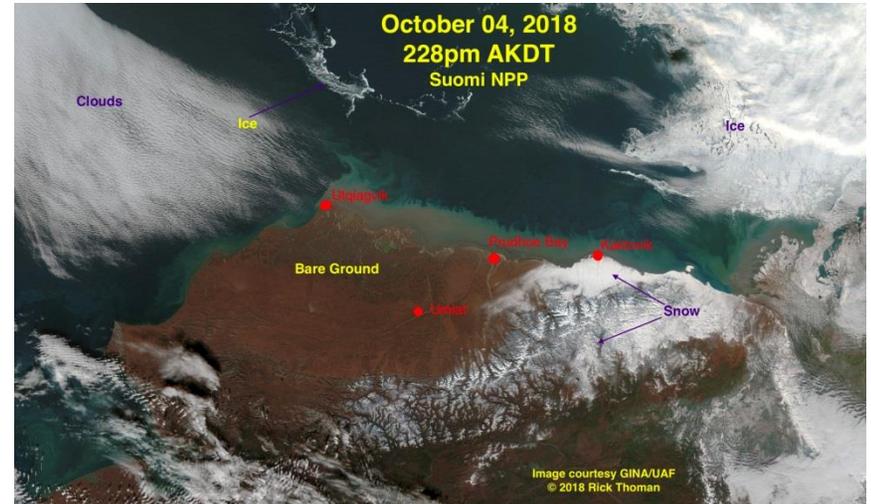
Environment and
Climate Change Canada

Environnement et
Changement climatique Canada



Temperature & Precipitation, September-November 2018

Between September and November 2018, Alaska, the majority of the Yukon Territory, and a small portion of northwestern Northwest Territories (NT) experienced warmer than average conditions. Small pockets of below average temperatures were recorded in northern BC and southeastern NT. In contrast, below average temperatures were observed over the eastern NT over that same period (not shown on the map). Total precipitation between September and November 2018 was below average over a small area in northwestern Alaska, and across a band spanning southern Alaska, southern Yukon, and southern NT. On the other hand, above normal precipitation was observed along the coast of the Beaufort Sea extending inland along the Alaska/Yukon border, and over northern eastern British Columbia.

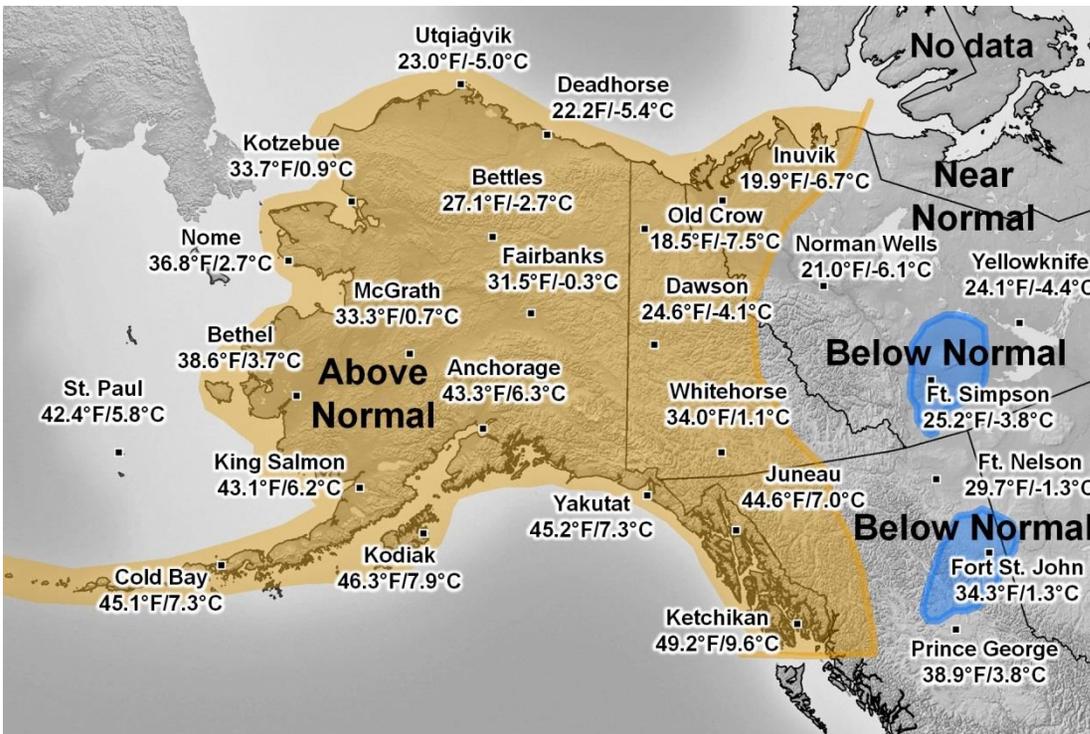


A persistent high pressure system brought warmer and drier than average conditions in Alaska. The photo above shows the resulting lack of sea ice along the shore of the Beaufort and Chukchi Seas, as well as the large extent of bare ground in Northern Alaska on October 4, 2018, where snow was limited to mountainous areas. Photo courtesy of GINA/UAF, Rick Thoman, 2018.

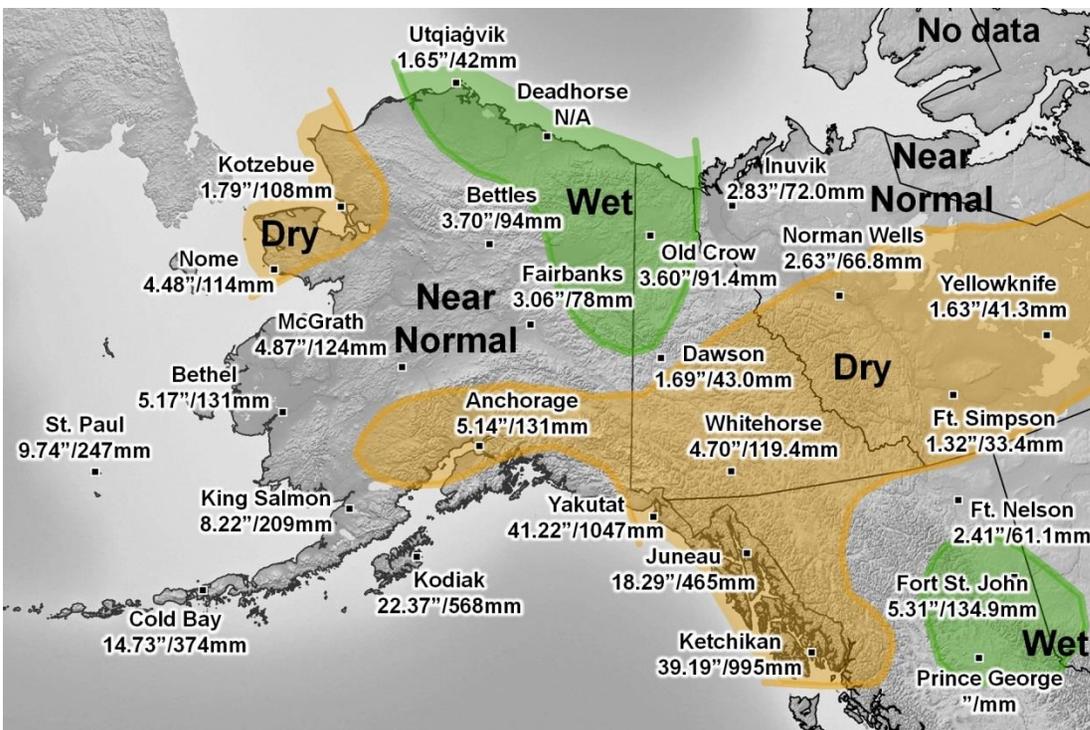


Unlike the majority of the Beaufort Sea area, the ocean edge in the Tuktoyaktuk area started freezing in October, and water stayed open until the end of November. This is much later than usual for the community, which typically sees freeze up by late September. This was partly due to warmer than average ocean temperatures.

The photo on the left shows a young boy throwing a rock into the ocean from a beach in Tuktoyaktuk, NT in late October 2018. Photo credit: Janet Elias.



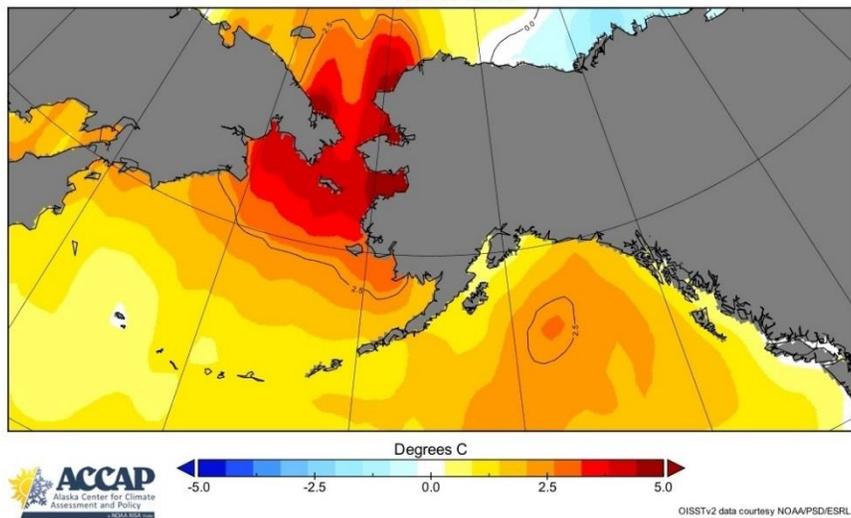
Source: NOAA and ECCC



Source: NOAA and ECCC

Warm sea surface temperatures in the Bering and Chukchi Seas

Sea surface temperature departure from normal
October 2018



Exceptionally mild sea surface temperatures continued across the Bering and Chukchi Seas through most of the autumn, as seen by the red areas in the above figure. The October average sea surface temperatures were 3°C above normal (red areas) everywhere north of St. Matthew Island. These are exceptionally large departures for sea surface ocean temperatures for this time of year in this region. This follows the summer when temperatures were very mild and which saw dramatic changes in fish stocks in the northern Bering Sea as Alaska Pollock swarmed north and Arctic Cod were hardly to be found.

The Gulf of Alaska was also very warm relative to normal. However, these warmer conditions are part of the warmth that covers most of the Pacific Ocean north of Hawai'i, which is quite different in origin and extent from the very warm northeast Pacific that made headlines in 2014 and 2015.



A few boats remain in the still ice-free harbor at Nome, Alaska on November 1, 2018. Photo by R. Thoman.

The influence of key climate indicators on the region



The figure shows the typical El Niño winter pattern, with warmer than average air temperature over western North America, and wetter and cooler than average conditions in southern United States. Figure courtesy NWS/NCEP Climate Prediction Center.

The climate of Alaska and northwestern Canada can be influenced by different climate indices, which vary on a yearly basis. The main climate indicators of the region are El Niño, the Arctic Oscillation (AO), the Pacific North American Pattern (PNA) and the Pacific Decadal Oscillation (PDO). As El Niño is developing this winter, its intensity is forecast to be weak to moderate at most. As a result, El Niño will only have some minor effects on weather in Alaska and northwestern Canada. This winter, the region will likely experience a winter similar to last year, where most of the region experienced warmer and wetter than average conditions, as illustrated in the above figure. Compounding climate effects from the AO, PNA, and PDO will likely have variable combined effects on winter conditions. Together, the key climate influences (El Niño, AO, PNA & PDO) will likely lead to a near normal winter, with air temperatures forecast to be somewhat above normal while precipitation will be highly variable throughout the region. Snow and sea ice cover, on the other hand, are likely to be lower than normal.

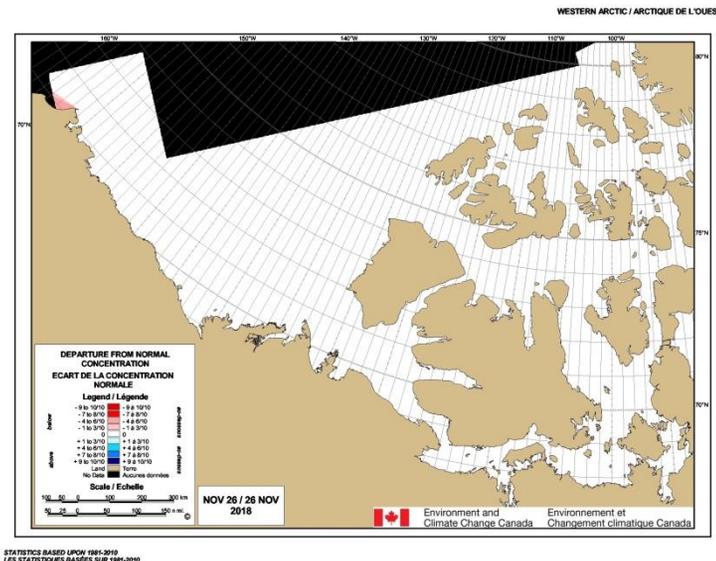
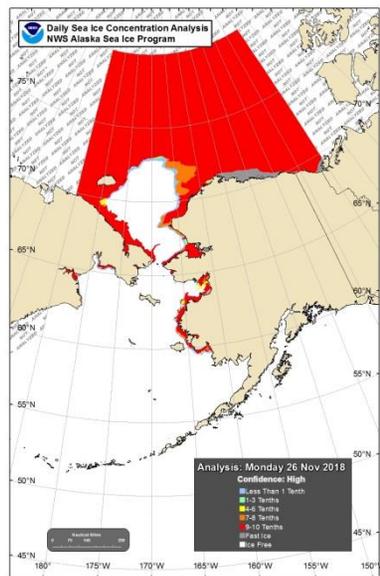
Drought conditions in southeast Alaska



The figure to the left shows the anomalously low water levels in Green Lake Dam near Sitka, Alaska. Typical water levels at this site are about half way up the dam from the level in this photo, where a white water level mark can be seen. Photo courtesy KCAW Radio.

Can a location that averages 150 inches (3,800 mm) of precipitation annually, and whose driest year saw 85 inches (2,100 mm) ever have a drought? The answer is unequivocally "yes" if you are in Ketchikan, Alaska. Over the last year, Ketchikan is over 30" (750 mm) below normal for precipitation. Fall 2018 saw a precipitation deficit of over 16" (400 mm)! The resultant drop in area lakes caused the hydroelectric generator at Swan Lake to be shut off in mid-October for several weeks. This meant that diesel was burned to generate electricity – a substantial cost to the community and environment.

Sea Ice Conditions at the end of November 2018 in the Beaufort and Chukchi Seas

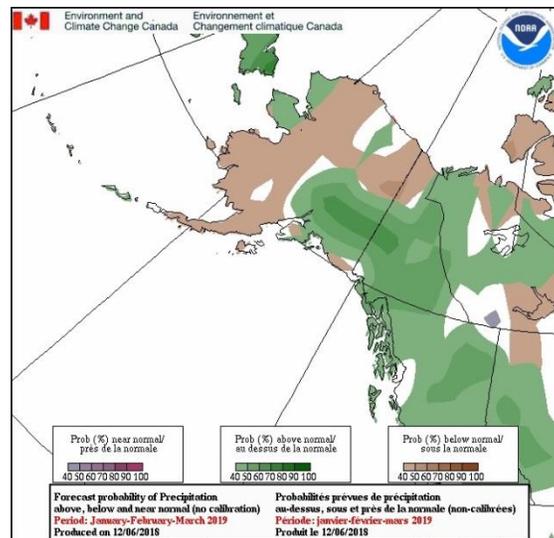
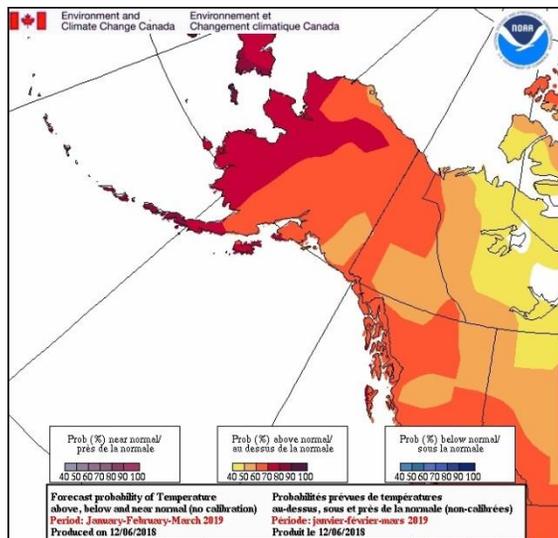


Sea ice north of Alaska continued to melt back during September and did not reach the lowest extent of the season until the first week of October. Thereafter, sea ice increased in the Chukchi Sea but there was no appreciable ice anywhere in the Bering Sea until the first days of November. Although sea ice growth was faster in Chukchi Sea during November 2018 than in November 2017, sea ice extent remained far below historical normal. The Bering Sea remained at or near record low ice extent due to the combination of a significantly warmer than average ocean surface temperatures and a change weather pattern that did not allow ice to set up and thicken.

By the end of November, freeze-up was complete in the Beaufort Sea. In addition, the region is experiencing overall greater than normal old ice which makes up 55% of the overall ice coverage in the region. Indeed, the old ice edge was located further south than normal and was about 30 to 50 nautical miles north of Hershel Island, Prudhoe Bay and Point Barrow by the end of November. The only exception is the northwestern part of the Beaufort Sea, which had less than normal old ice at that same time.

Temperature Outlook: Jan.-Mar. 2019

Precipitation Outlook: Jan.-Mar. 2019



A combined Canada-USA climate forecast model is used to provide temperature and precipitation outlook for January-March 2019.

The temperature outlook for January through March 2019 shows that Alaska and northwest Canada have a 40-90% chance of above average temperature (warm colors). None of the area is forecast for having chances of below average temperatures for that period.

The precipitation outlook for January through March 2019 shows that most of eastern Alaska, the Yukon, the western part of the NWT, and northern British Columbia have a 40-60% chance of above normal precipitation (green areas). The majority of western Alaska, a portion of northern Alaska along the coast of the Beaufort Sea, as well as the Great Slave Lake area, Banks Island, and the portion of Victoria Island showing on the map in the NWT have a 40-50% likelihood of below normal precipitation (brown areas).

Content and graphics prepared in partnership with the Alaska Center for Climate Assessment and Policy and Environment and Climate Change Canada.

ALASKA REGION PARTNERS: Alaska Climate Research Center, Alaska Climate Science Center, National Snow and Ice Data Center (NSIDC), NOAA / NWS Weather Forecast Offices, NOAA National Weather Service Alaska Region, NOAA / NESDIS / NCEI, Scenarios Network for Alaska + Arctic Planning.

ALASKA CENTER FOR CLIMATE ASSESSMENT AND POLICY CONTACTS:
RICK THOMAN rthoman@alaska.edu
BRIAN BRETTSCHEIDER:
brbrettschneider@alaska.edu

ENVIRONMENT AND CLIMATE CHANGE CANADA WESTERN CONTACTS:
GABRIELLE GASCON
gabrielle.gascon@canada.ca